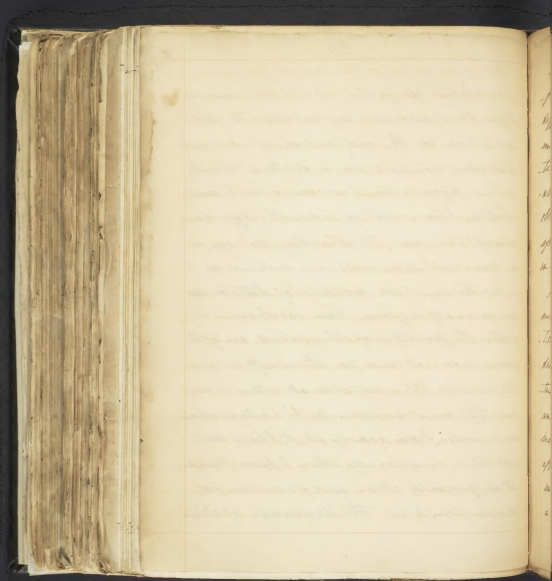


Of Diabetes

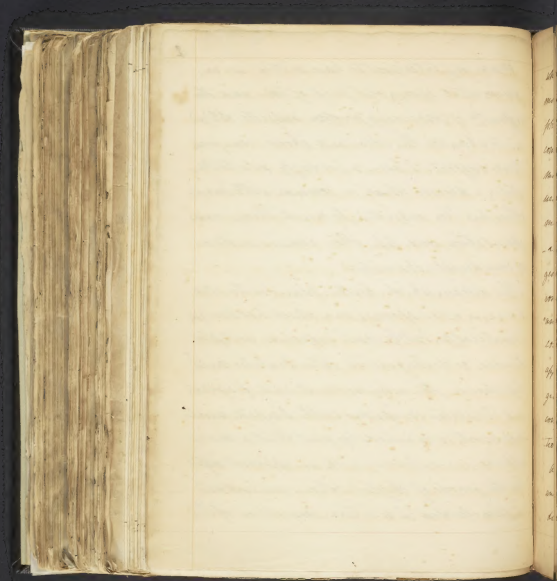
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Being subjected to the influence of those laws and customs relative to graduation in this institution, which require that every candidate for a diploma should write a dissertation previous to his examination, I have with considerable diffidence undertaken one, which nothing but my peculiar situation could have induced me to do at this time. For possessed of little or no experience of my own, I am constrained to follow the footsteps of others, which are often times incorrect and for the most part questionable. Thus situated, all claim to originality must necessarily be relinquished, and so far from aiming at it, I have not hesitated occasionally, when I have found it sufficiently clear and familiar for my purpose, to use the language of others.



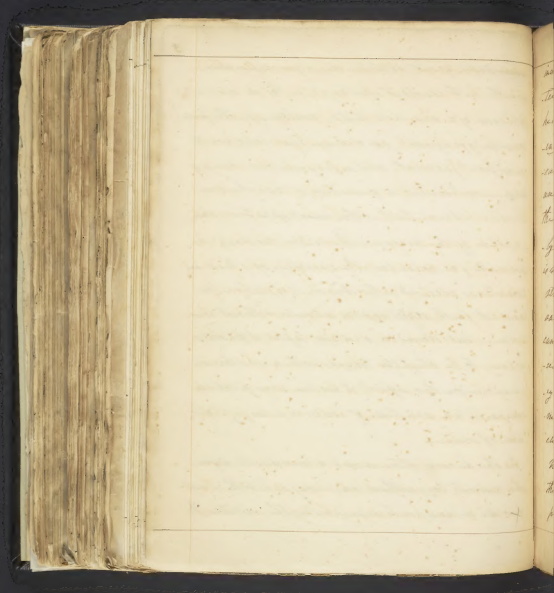
It was my intention to have written an experimental essay but want of time and the difficulty of procuring proper subjects obliged me to abandon the idea and choose some practical subject. I have accordingly selected Diabetes, a disease which in common with many others has been subjected to much theory and speculation and like others remains involved in considerable obscurity.

This disease which Sullen places in the class nervous or spasmodic and which has been systematically but by some supposed uselessly divided or distinguished into Diabetes mellitus wherein the urine is sweet and fragrant, and Diabetes insipidus with limpid urine not sweet, is marked by great thirst, a voracious appetite, accompanied with an apparent defect in the process of chylofication, wasting and a disposition to excite, emaciation of the



whole-body, great debility, dry skin, a parched mouth, with constant spitting of a thick viscid phlegm of a sweetish taste, costiveness, the pulse commonly frequent, an obvious fever being for the most part present, and a frequent voiding of urine, containing a quantity of saccharine matter (which last is the most essential character of the disease) the urine discharged generally far exceeding the quantity of fluid and sometimes aliment introduced, being very clear and at first sight appears entirely without any colour; but viewed in a certain light, it generally appears to be slightly tinged with a yellowish green; and in this respect it has been very properly compared to a solution of honey in a large proportion of water.

As this disease often arises to a considerable degree, and subsists long without being accompanied with violent disorder in any particular part of the system, the



increased discharge of urine being generally attrib-
 uted by the patients to the quantity of drink
 he has taken; there is some difficulty in ascertain-
 ing the first and earliest symptoms of the dis-
 ease, or that state of it at which the sweetening
 and increase of the urine takes place, for
 the saccharine taste of the urine is frequent-
 ly only discovered by accident. Dr. Solis thinks there
 is scarcely a doubt but that an affection of the
 stomach exists previous to the formation of
 saccharine matter and mentions cases where the
 canine appetite preceded several months the in-
 crease of the urine, he thinks however the histo-
 ry of the previous circumstances, and of the im-
 mediate commencement, still requires further
 elucidation -

No age or constitution seems to be exempted from
 this disease. It occurs in all climes & people, though
 probably more generally in the higher and middling

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order, and those whose constitutions have been shattered by intemperance. Males are said to be more liable to it than females; although probably this may not be the case, for its apparently more frequent occurrence in males, may I imagine rather be attributed to the extreme delicacy of the female sex concealing their situation when under the influence of the disease than to any peculiarity of their constitutions exempting them from it. It is probable that an hereditary predisposition may exist as to the complaint, for cases are recorded where several members of the same family have been affected with it. The progress of the disease appears to be much influenced by the various passions of the mind, such as grief and fear &c. as they always aggravate the symptoms.

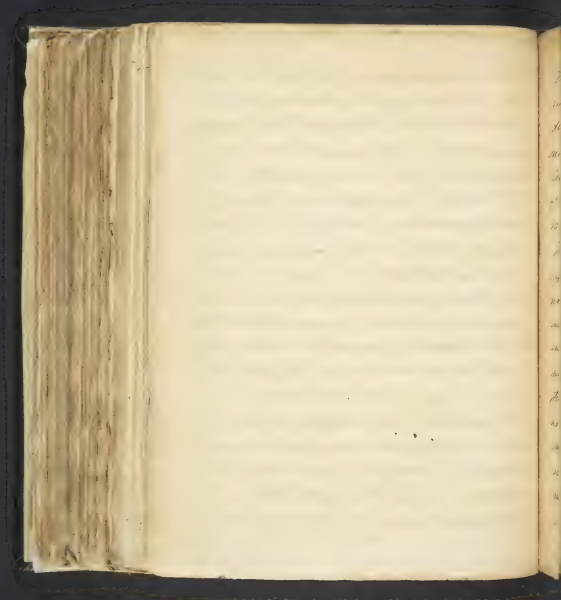
When Diabetes has been of long continuance, although the poison may be apparently cured yet frequently, it leaves behind local affec-

ions. Digestions have shown morbid affections of the mucous glands and kidneys, and the structure of the stomach, pancreas, spleen, and lungs is sometimes altered.

It appears to be now pretty generally conceded that Diabetes mellis contains a considerable quantity of saccharine matter, which appears to be exactly of the same nature as common sugar.

Dr Cullen thinks that he has met with one case where the urine was perfectly impregnated, he seems to consider such instances very rare, and believes that the other is almost the universal occurrence. Min. Dr Willis discovered the sweetness of the urine; physicians have all more or less observed it.

The immediate cause of Diabetes mellis has always been considered obscure, and various theories have been advanced on the occasion. I shall only observe a few of them, and then proceed to mention the one which appears to me most plausible.



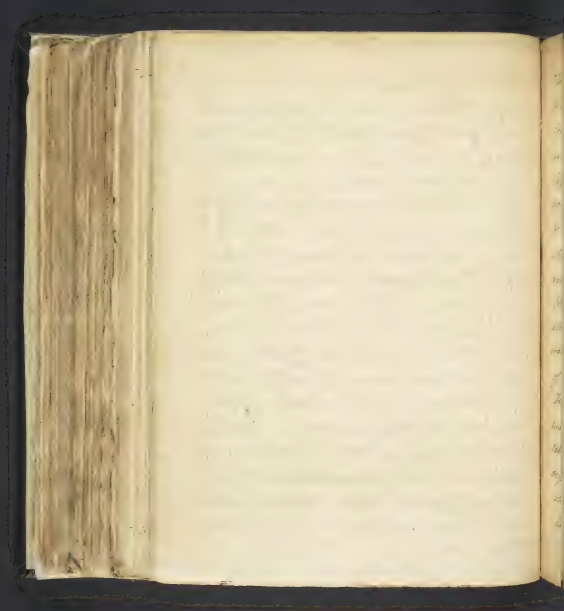
The morbid condition, in which the kidneys are sometimes found in diabetes, has induced the majority of physicians to consider Diabetes as depending on a primary affection of those organs, and that it is the result of their prevented or deranged action, and the secretion of sugar is the consequence.

This morbid state of the kidneys may be secondary, and referable to that law of the animal economy termed, competition, by which their action is increased according to the exigencies of the system, and being kept up for any length of time, must necessarily produce more or less disease by the continued stimulus it imparts. They have no agency & relation in the formation of the sugar incident to Diabetes insipidus; but more is secreted because it is being formed in the stomach, and to throw it out of the system. Some who favour the idea of the primary ^{cause} existence,



in the kidneys, have endeavoured to show the possibility of the sugar being formed by a secretion similar to that which takes place in the breasts of women, which secrete a large amount of saccharine principle in the milk.

The faculties and capacities with which fluids containing different principles, are conveyed to the kidneys; whilst the quality of the urine discharged is so different; has occasioned some to regard those organs as excretory, rather than secretory; and consequently they consider the urine not as excreted but as educt of the blood. Admitting however this similarity between the action of the intestines and kidneys at least so far that each secrete a saccharine principle, yet it has been demonstrated by chemical investigation, that there is an essential difference between the sugar of milk and the saccharine matter in Diabetic urine,



Two drams of the sugar & milk were dissolved by
 French brandy. in 12 drams of water, red, etc.
 led with 3i of water. This was evaporated,
 and put to cool; which being done, a crystall.
 fixed mass formed, mixed with a certain stony
 powder. The precipitate weighed about 10
 grains. ten grains of boiling water were added
 the crystals of oxalic acid were dissolved,
 and the white powder remained unchanged.
 This was separated by filtration, and weighed
 about 10 grains; and in further experiment,
 was found to possess all the peculiar properties
 of saccharine acid.

Two drams of the extract of Diabetic urine were
 heated at the same time in a similar water crop-
 rate formed, but no white powder appeared, the
 crystals weighed about 40 grains; and were
 wholly dissolved in boiling water. No sacche-
 lactic acid was produced in this experiment

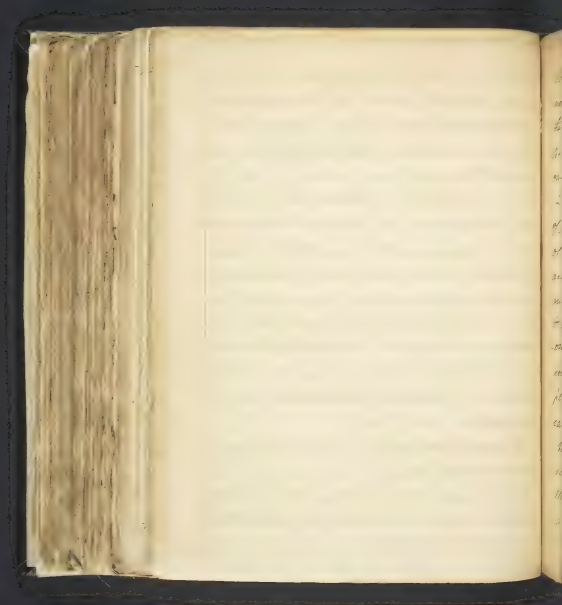


which was repeated several times in the extract
of urine from different Diabetic patients.

It would seem from these experiments of Mr
Friedrichs, that the peculiar difference be-
tween the sweet or a native matter of Diabetic
urine, and sugar of milk, consists in the for-
mer not containing the basis of saccharine acid.
It would also appear from this, that the sugar
of milk was produced by a process of animalization
on, whereas the saccharine principle of Diabetic
urine should be regarded as a vegetable extract,
combined with a greater or less proportion of ani-
mal mucus, resembling very much honey,
which is not a product of animalization but of
vegetables.

A certain state of the bile has been supposed
to produce this disease.

It is probable that it has sometimes occurred in
persons who were at the same time affected with

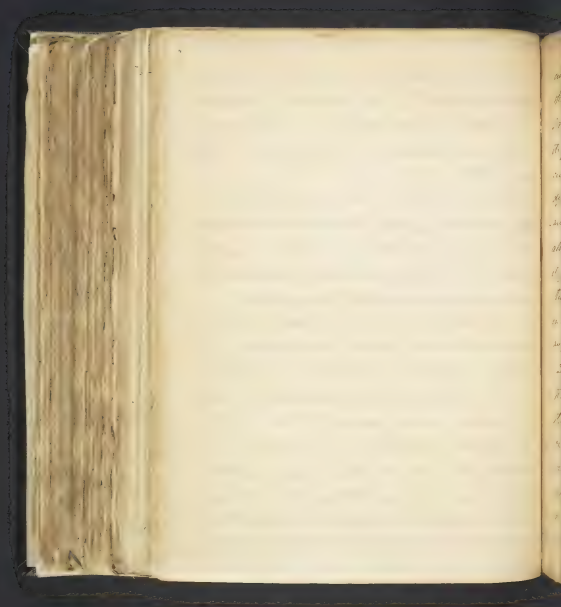


disease of the liver. But I apprehend that this can not frequently be the case, for Dr Cullen observes that in urinary incontinence, which he has seen of Diabetes, there was no evident affection of the liver in any one of them.

Dr Richter, professor of medicine in the university of Gottingen, supposes Diabetes to be commonly of a spasmodic nature, occasioned by a stimulus acting on the kidneys; which an increased secretion, and sometimes perversion is the consequence.

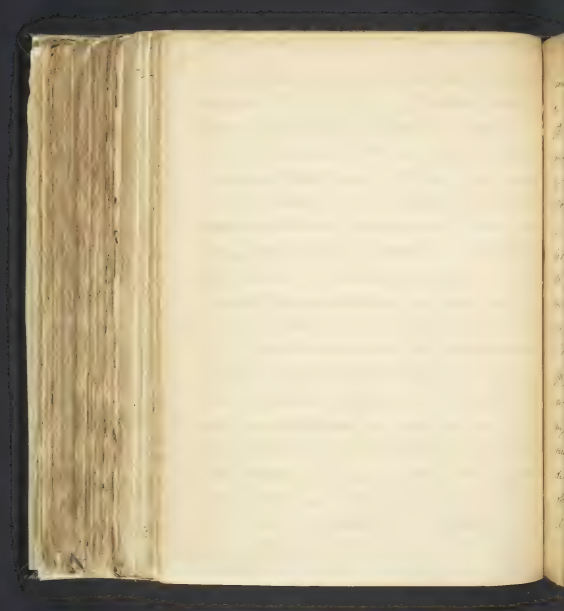
It is true that irritation may sometimes occasion an increase in the discharge of urine, but now it effects the singular change which takes place in its composition, I imagine can not easily be accounted for.

His Hypothesis yet advanced seems to prove in a satisfactory manner the primary seat of this disease, but from the weight of evidence and an attentive consideration of all the cir-



cumstances attending it, I am induced to believe that it is altogether a disease of the stomach. I was led to this opinion, in the first place, from its often attending other diseases of that viscus, such as hyperæmia, hypochondriasis and dyspepsia in the second from the various appetite, indigestion and constipation which almost invariably attend it in the third from its general occurrence in those whose constitutions have been shattered by intemperance in drinking or other excesses, the effects of which are primarily exerted on the stomach.

In one of his lectures on Diabetes, read before the Royal College, when he appeared with the corrected view, and supported his opinions with the most conclusive arguments, he said that the stomach was to be regarded as the primary seat of the disease; from the saccharine matter being derived in part from vegetable



substance taken in. Scattered Mottos he was
 as to age, appeared to rising from an action of
 the stomach, morbidly increased, by which a large
 quantity of sacchar. liquor was secreted, which also
 by its morbid nature seemed capable of decom-
 posing the scabrous matter, and therefore of
 producing the saccharine principle incident
 to the disease, in which, vegetables do not appear
 to undergo the changes that take place in humors,
 but remain nearly changed into the sacchar.
 line principle.

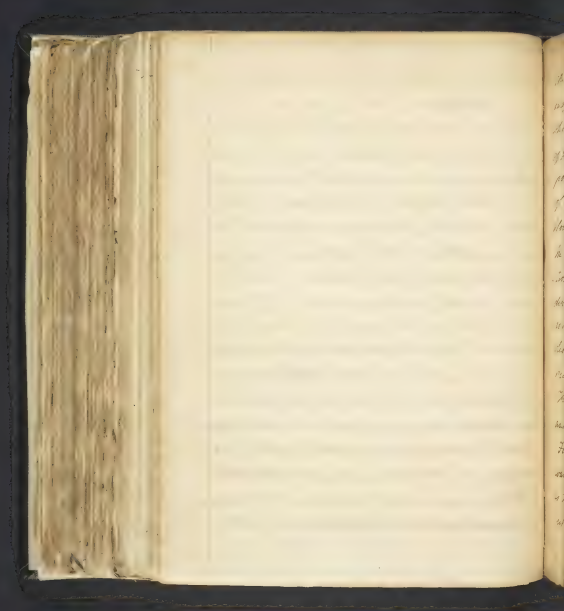
In health, an uniform and perfect chyle is
 prepared, and applied to the various purpo-
 ses of the animal economy. In its composition,
 sugar appears to be an essential article, but it
 undergoes the proper changes, whereas in this
 disease it remains unchanged, producing
 other morbid affections, besides those on which
 its undecomposition depends, and is thrown



out by the kidneys, as an excessive and superfluous matter.

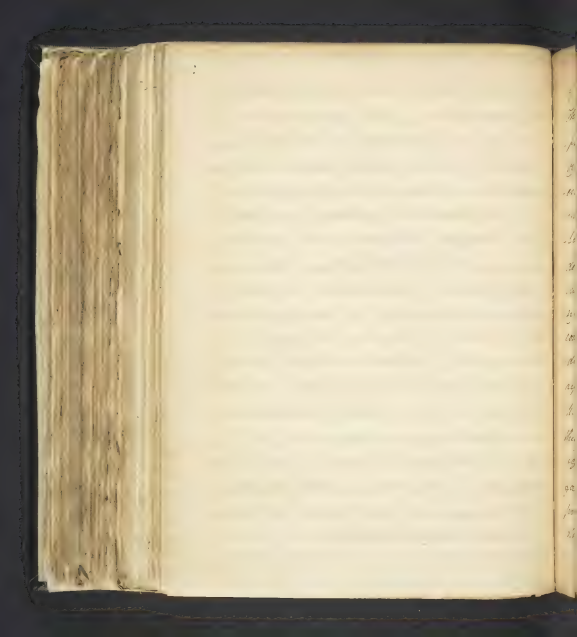
The alteration and increase in the secretion of the gastric fluid, appears to be the necessary consequence of the morbid action of the stomach. The great quantity of viscid matter ejected by vomiting in this disease, together with the nature and rapidity of digestion, supports the opinion of such an increase in the gastric fluid.

To the formation of saccharine matter, is the explanation of the increase in the quantity of uric acid principally, separated, although from the intestinal connection between the stomach and kidneys, we may suppose that independent of the saccharine matter, so long as the increased action of the stomach remains, a proportional quantity of uric acid will continue to be discharged. In addition to the arguments derived from



the disease itself, we have the observation of many practitioners of the highest eminence which very satisfactorily prove, that the blood of Diabetic patients contains sugar in its composition - we learn from the experiments of Dr Dobson that he detected sugar in the blood of persons labouring under Diabetes. In a case of Diabetes which fell under the observation of the late physician Barton, his patient discharged darker larger quantities of sweated urine matter in his urine. In analysing this fluid and testing the serum of the blood, the presence of sugar was distinctly exhibited. The experiment was repeated several times and with the same results.

From the facts above related, I imagine I am warranted in the conclusion, that the stomach is the primary seat of the disease depending upon some change in the natural process



& digestion and assimilation in the stomach.
 The food is highly rendered unfit for the
 purposes of nutrition, and when taken up
 by the lacteals, and conveyed to the gen-
 eral circulation, it is rejected by the
 nutrient forces of the system, and elimina-
 ted through the kidneys. The morbid or
 deranged action of them or ours is produced
 in the efforts of nature, to give the vascular
 system of that organ of fluid which is
 constantly pouring into it through the me-
 dium of the lacteals. I therefore again
 repeat that the diseased appearance of the
 kidneys is entirely owing to sympathy - by it
 their action is increased according to the ex-
 igencies of the system; and being continued
 for any length of time, will necessarily
 produce more or less disease by the continued
 stimulus which it imparts -



It is the opinion of Mr Wallaston and some others that the saccharine principle of Diabetic urine formed in the stomach, is conveyed immediately from thence to the mediary system, without entering the general circulation. The above gentlemen wished to test this opinion from not being able to detect sugar in Diabetic blood. To confirm which he in conjunction with Mr Street performed a number of experiments on the Pump Snake the question was whether it could be detected in the blood or the excretions, when taken internally. After experimenting several times with the article above mentioned, they concluded, that it was not absorbed or taken up into the general circulation, but carried by some unknown vessels from the stomach to the kidneys.

For my own part I am entirely doubtful what you mean to gain respecting the immediate connection

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between the Stramon and kidneys. It appears
 however that Mr. Williams not attending the
 Phys. Polys in the blood proceed rather from
 the imperfect state of chymica. Accretion, than
 to its actual absence. The specific differences
 between marsh miasmata and common atmo-
 -spheric air, have never yet been discovered, but all agree
 that their properties are essentially distinct, and
 that we only know them by their effect on the
 system, ignorant of the nature of their agen-
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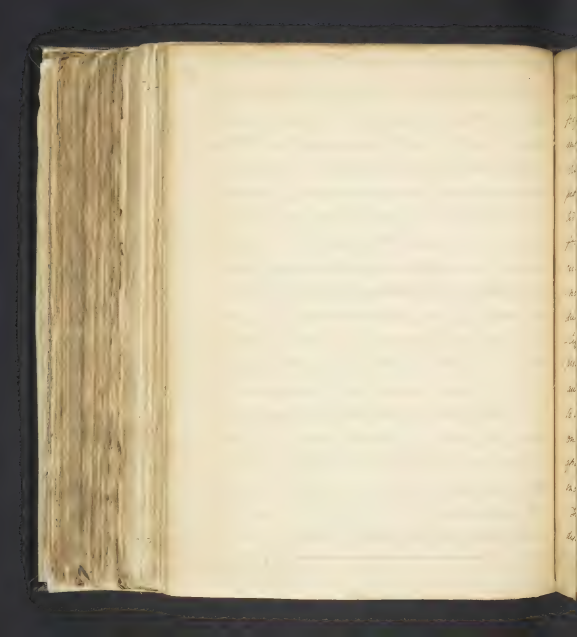
By no means wish it to be understood, from hence
 as my opinion, that substances enter indiscrimi-
 -nately into the circulation unchanged, for from
 it, I believe, as a general rule that all substan-
 -ces are assimilated previous to their being taken
 up by the lacteals.

The cure of Diabetic Mellitus is as yet but
 imperfectly understood. This appears to be

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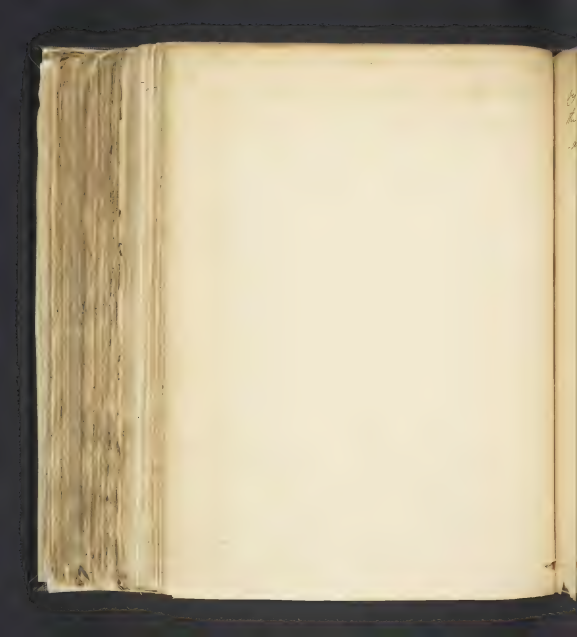
acknowledged unanimously. Dr. Sullen doubts whether it has ever been cured, or if cured, whether it can be avoided with remedies taken. The treatment has been as various as the theories respecting the disease itself. Two remedies according to the late Dr. Barton have acquired more reputation than any in Febrile. He mentioned a case which he witnessed cured by the use of that article. Dr. Barton supposed that gale might be substituted with advantage for alum. he had heard of one case cured by the use of silver. Dr. Miller considered chubal as a tonic in this disease. Marsacani advised the use of castoreum. Ferrius in Bologna & a combination of Uva Ursi, bark and opium. Others about the region of the kidneys are said to be sometimes serviceable. Dr. Barton thought that he had used the Phosphate of soda as a purgative with advantage.

As the modes of treatment which have hitherto been



person repeating this system appear to have been
frequently introduced. I shall briefly make
mention of the plan recommended by Dr. Rollo;
which according to the view I have given of the
proximate cause of Leucoderma appears to be best adap-
ted to it, in which is said to have frequently per-
formed cures under the most unfavourable
circumstances. Forfeiturement, an entire abstin-
ence from every species of vegetable matter, a
diet solely of animal food, with emetics, hyge-
-nia ammonia and narcotics, comprehend the
principal plan of his treatment: which sum-
marily the two indications which he supposes
to be 1st to destroy the saccharine mucus going
on in the stomach. 2^d to promote a healthy
operculation, by the removal of the morbid
increased action of that organ.

This method should be pursued in, until the
disease be entirely removed, which is ascertained



by the removal of the general system, and
the return of the union to a natural con-
-dition.



